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# A Structural Equation Model of Governing Factors That Influence the Development of Sustainable Insurance Products in the Future: Evidence from the Indonesian Insurance Industry

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# Introduction

- The insurance sector has an enormous potential, and plays a pivotal role in the economic development and sustainable growth.
- Sustainable products are created by integrating economic, social, and governance (ESG) factors in their product features.
- Indonesian Financial Services Authority (*Otoritas Jasa Keuangan*, OJK) Regulation No. 51/POJK.03/2017 concerning the Implementation of Sustainable Finance by Financial Firms mandates every financial institution in Indonesia to implement sustainable finance.
- Indonesian insurance firms have considerably offered three sustainable insurance products: (1) agriculture insurance, (2) micro-insurance, and (3) weather index insurance.
- Indonesian insurers still have a big room for maneuver in product offering.

# Introduction

- To address the prevalent issues, we investigate whether Indonesian insurance firms have the capability of developing sustainable insurance products, and in what state the product development has been reached.
- We attempt to construct the ESG profile by integrating three components:
  - (1) a firm's level of understanding of ESG principles,
  - (2) the way or manner by which the firm is integrating the ESG,
  - (3) the firm's paradigm on ESG integration.
- We harness the insurer's awareness as a component for constructing the ESG profile.

# Research Objectives

1. To analyze Indonesian insurance firms' level of understanding of sustainable finance principles
2. To discuss the current circumstances of sustainable insurance implementation by Indonesian insurance companies
3. To explore the potentials of sustainable insurance development in Indonesia

# Theoretical Foundation: Sustainable Insurance

- The major purposes of sustainable insurance are to:
  - (1) minimize risk,
  - (2) develop innovative solutions,
  - (3) increase business performance,
  - (4) contribute to the longevity of the environment, society, and economy.
- Being sustainable means that an insurance company conducts its business activities while taking into account the environmental aspect, social circumstances, and financial dimension to ensure its longevity down the road.
- In recent years, focus has increasingly been shifted toward inclusive insurance or micro-insurance.
- In Ghana, the German Technical Development Cooperation Agency (GIZ) has corroborated a project aimed at developing and creating a market for Insurance Products for Adaptation to Climate Change (IIPACC).
  - Facilitate the development of commercial insurance solutions to protect farmers, agro-processors, rural and financial institutions, input dealers, etc. in the event of crop failure due to extreme weather events.

# Theoretical Foundation: Sustainable Insurance

- An insurance firm's notable challenges are both risk identification and measurement.
- According to the National Disaster Relief Agency (BNPB), Indonesia suffered from 2,341 incidents of disasters during 2017 (Riswandi, 2018).
- Accordingly, insurance products that insure climate change have a high demand potential in Indonesia, implying that insurer's capacity to identify and measure climate risk may significantly lead to stronger firm performance.
- The V20 countries are conducting studies on the creation of a sovereign V20 Climate Risk Pooling Mechanism to share economic and financial risks, improve recovery after climate-induced extreme weather events and disasters, and enhance job security, livelihood, businesses and investors.

# Theoretical Foundation: Sustainable Insurance

- Sustainable insurance concept is an amalgamation of the green insurance and the social insurance concepts.
- Issues that are main concerns of sustainable insurance include:

- **Green issues**

According to the United Nation's 2015 Global Assessment Report on Disaster Risk Reduction report, 25.4 million people experienced losses due to natural disasters or other circumstances related to climate change each year (after 2007).

Green insurance usually encompasses insurance with a variety of premia and base characteristics/behavior relevant to environmental conditions, as well as products aimed to compel people to engage in green activities and sustainability.

- **Social issues**

Prevalent social issues of concern to the insurance industry include, among others, financial inclusion, human rights violation, increased human-caused health risks, and aging population.

- **Governance issues**

Governance issues pertaining to the insurance sector in actualizing sustainable insurance include: regulations implemented within an insurance firm, process monitoring, alignment of interests with stakeholders, organizational values, code of ethics, business principles, and transparency of the firm.



# Research Methods

- This research employs a positivism approach as it includes the confirmatory verification of different experiences
- This study is essentially quantitative exploratory:
  - analyzing Indonesian insurance firms' level of understanding of ESG principles
  - discussing the current circumstances of ESG implementation by Indonesian insurance firms
  - evaluating the potentials for sustainable insurance development in Indonesia.

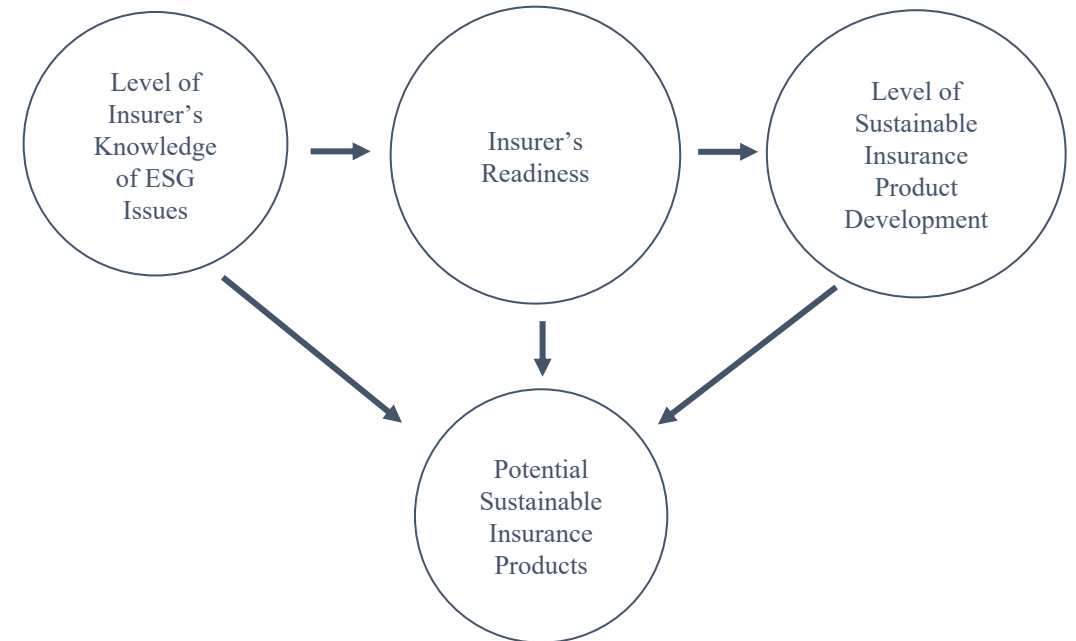


# Research Methods

- Data were collected through a questionnaire distributed to top management responsible for sustainable product development and/or investment of the Indonesian insurance companies from July to September.
- Sample firms in this study are all Indonesian insurance companies that sell general (property and casualty) insurance products, with a total sample of 44 companies.
- Questionnaire set is comprised of five parts, with both open and closed questions.
- Indonesian insurance firms' level of understanding is gauged through respondents' feedback on part one of the questionnaire
- The current circumstances of ESG implementation by Indonesian insurance firms are depicted by the survey participants' responses in the questionnaire.
- Data are analyzed using a multivariate analysis technique.

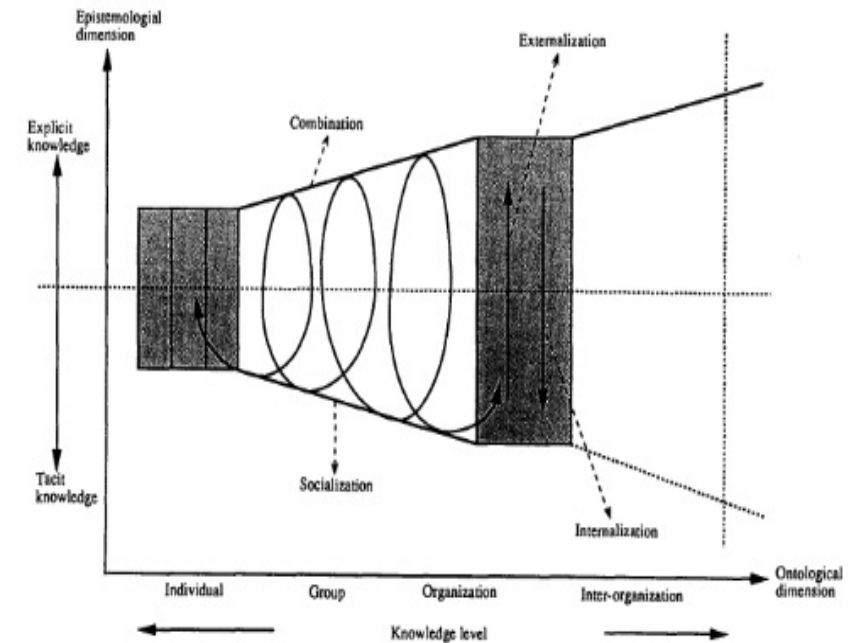
# Research Framework and Rationales

- From Haffar et al.'s (2013) findings, it is indicated that organizations should be focused on individual change readiness (ICR) to adopt various changes in already-developed processes/products.
- Indonesian insurance firms differ one from another in which they have a unique ICR nature that becomes a mediating variable between the Level of Insurer's Understanding of ESG Issues and the Level of Sustainable Insurance Product Development.
- The framework is created from the notion that there is an association between knowledge and organizational learning.



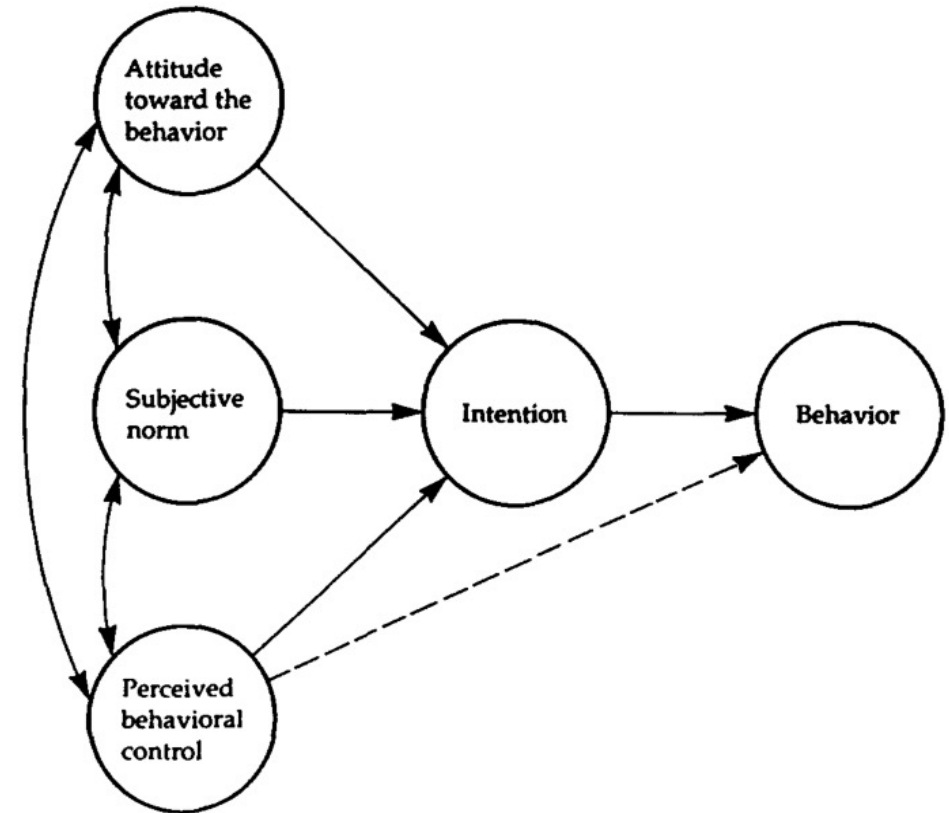
# Research Framework and Rationales

- The core theory that underlies the framework is from Nonaka's (1994) discussion on the interaction between tacit and explicit knowledge and its subsequent spiraling through different organizational levels.
- Knowledge creation is focused on the building of both tacit and explicit knowledge and on the interconnectedness between the two through internalization and externalization

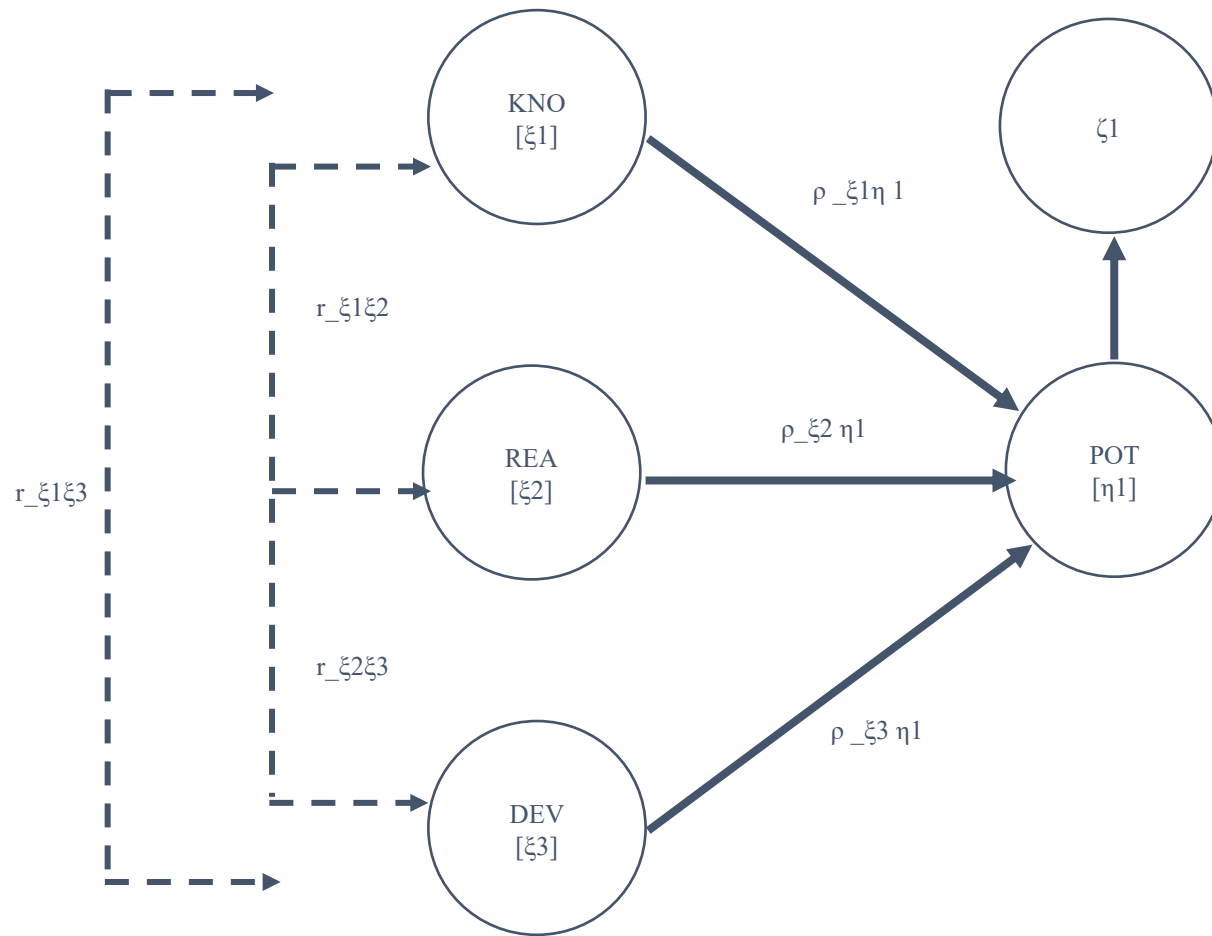


# Research Framework and Rationales

- Another concept that configures our research framework is the Theory of Planned Behavior (TPB)
- A central factor in the TPB is an individual's intention to perform given behavior (Ajzen, 1991)
- Intention is assumed to capture motivational factors that affect behavior.
- As a general rule, the stronger the intention to engage in behavior, the more likely the higher performance would be.
- We attempt to capture the motivational factors that influence behavior and the willingness of respondents to comply with sustainable insurance and ESG issues.



# Research Model



KNO = the first exogenous variable that represents the level of insurer's knowledge of ESG issues.

REA = the second exogenous latent variable that represents insurer's readiness.

DEV = the third exogenous latent variable that is a proxy for the level of sustainable insurance product development.

POT = the endogenous latent variable that represents potential sustainable insurance products.

$r_{\xi 1 \xi 2}$  = coefficient on the correlation between [KNO] and [REA].

$r_{\xi 1 \xi 3}$  = coefficient on the correlation between [KNO] and [DEV].

$r_{\xi 2 \xi 3}$  = coefficient correlation between [REA] and [DEV].

$\rho_{\xi 1 \eta 1}$  = path coefficient on [KNO] to [POT].

$\rho_{\xi 2 \eta 1}$  = path coefficient on [REA] to [POT].

$\rho_{\xi 3 \eta 1}$  = path coefficient on [DEV] to [POT].

$\zeta_1$  = error term.

# Research Model

$$\eta_i = \gamma_1 \xi_{1i} + \gamma_2 \xi_{2i} + \gamma_3 \xi_{3i} + \varepsilon_i$$

where:

- $\eta_i$  = the endogenous latent variable that represents potential sustainable insurance products.
- $\xi_{1i}$  = the first exogenous variable that represents the level of insurer's knowledge of ESG issues.
- $\xi_{2i}$  = the second exogenous latent variable that represents insurer's readiness.
- $\xi_{3i}$  = the third exogenous latent variable that represents the level of sustainable insurance product development.
- $\gamma_1, \gamma_2, \gamma_3$  = regression coefficients on exogenous latent variables.
- $\varepsilon_i$  = error term.

# Research Model

| No. | Variable | Description   | Definition   |
|-----|----------|---|--|
| 1.  | KNO      | First exogenous variable that represents the level of insurer's knowledge of ESG issues         | Insurer's understanding of the adoption level of Eight Principles of Sustainable Finance in the insurer's business practice  |
| 2.  | REA      | Second exogenous variable that represents insurer's readiness                                   | Insurer's level of readiness for Sustainable Finance implementation in its firm  |
| 3.  | DEV      | Third exogenous variable that represents the level of sustainable insurance product development | Development of insurance products based on the Categories of Environmental-Based Business Activities (KUBL) and the integration of Environmental, Social, and Governance (ESG) components in the company's business practice |
| 4.  | POT      | The endogenous variable that represents potential sustainable insurance products                | Some potential Sustainable Insurance Products that could be developed by Indonesian insurance firms  |



# Research Model

- To measure the constructs, this research uses a five-point Likert scale, with “1” being strongly disagree and “5” being strongly agree. There are 56 indicators utilized in the questionnaire.

This table provides information on the quantity of indicators in the questionnaire for each construct. There are 56 indicators in total.

| <b>Indicator</b> | <b>Description</b>                    | <b>Quantity</b> |
|------------------|---------------------------------------|-----------------|
| kno_x            | Reflective indicator for KNO variable | 11              |
| rea_x            | Reflective indicator for REA variable | 15              |
| dev_x            | Reflective indicator for DEV variable | 19              |
| pot_y            | Reflective indicator for POT variable | 11              |
| <b>Total</b>     |                                       | <b>56</b>       |

# Research Model

- To determine how well the theory fits the data, and evaluate the measurement model, this study conducts various examinations (Hair et al., 2013, pp. 97)

| Criterion                                   | Rule of Thumb  |
|---|--|
| <b>Evaluation on the Measurement Model</b>  |  |
| Internal consistency reliability            | 0.70 - 0.90  |
| Indicator reliability                       | $\geq 0.708$   |
| Convergent validity                         | $AVE \geq 0.50$  |
| Discriminant validity                       | $\sqrt{AVE} > \text{highest correlation}$                            |
| Collinearity among indicators               | $VIF < 5.0$  |
| Significance and relevance of outer weights | $\geq 1.96 (\alpha = 0.05)$  |
| <b>Evaluation on the Structural Model</b>   |  |
| Coefficient of determination ( $R^2$ )      | 0.10 (very weak), 0.25 (weak), 0.50 (medium), and 0.75 (substantial) |
| Predictive relevance ( $Q^2$ )              | $> 0$  |
| Size and significance of path coefficients  | $\geq 1.96 (\alpha = 0.05)$  |
| $f^2$ effect size                           | 0.02 (small), 0.15 (medium), and 0.35 (large)                        |



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# Results & Discussion

# Respondent Information

- Total respondents in this research are 44 people:
  - 15 persons as executive directors (34 percent)
  - 29 persons as non-directors (66 percent)
- Based on company scale classification, i.e., based on total assets owned:
  - 29 small-scale insurance companies with total assets of less than Rp2 trillion (66 percent)
  - 9 small-and-medium-sized companies (20 percent)
  - 4 big firms (11 percent)
  - 1 medium-sized (2 percent)

# Model Evaluation: Convergent Validity

- The questionnaire construct is mostly convergent, with the exception of [DEV] variable as it has an AVE coefficient slightly below 0.5
- If an AVE is less than 0.5 but the composite reliability is higher than 0.6, then the convergent validity of a construct is still adequate (Fornell and Larcker, 1981).

| Parameter   | Variable | Coefficient | Rule of Thumb | Conclusion          |
|-------------|----------|-------------|---------------|---------------------|
| Average     | KNO      | 0.617       | More than 0.5 | Acceptable          |
| Variance    | REA      | 0.595       | More than 0.5 | Acceptable          |
| Extracted   | DEV      | 0.499       | More than 0.5 | Slightly Acceptable |
| (AVE)       | POT      | 0.746       | More than 0.5 | Very Acceptable     |
| Communality | KNO      | 0.780       | More than 0.5 | Very Acceptable     |
|             | REA      | 0.766       | More than 0.5 | Very Acceptable     |
|             | DEV      | 0.689       | More than 0.5 | Acceptable          |
|             | POT      | 0.862       | More than 0.5 | Very Acceptable     |

# Model Evaluation: Discriminant Validity

- Fornell and Larcker (1981) reveal that to check the discriminant validity, the square root of AVE is compared with the correlations involving the constructs, where the former is expected to be greater than the latter.
- The overall construct of questionnaire is valid since the correlations among latent variables are below the square roots of AVE coefficients for all variables.

|     | KNO     | REA     | DEV     | POT     |
|-----|---------|---------|---------|---------|
| KNO | (0.786) | 0.736   | 0.631   | 0.595   |
| REA | 0.736   | (0.771) | 0.558   | 0.409   |
| DEV | 0.631   | 0.558   | (0.701) | 0.649   |
| POT | 0.595   | 0.409   | 0.649   | (0.864) |

# Model Evaluation: Reliability Test

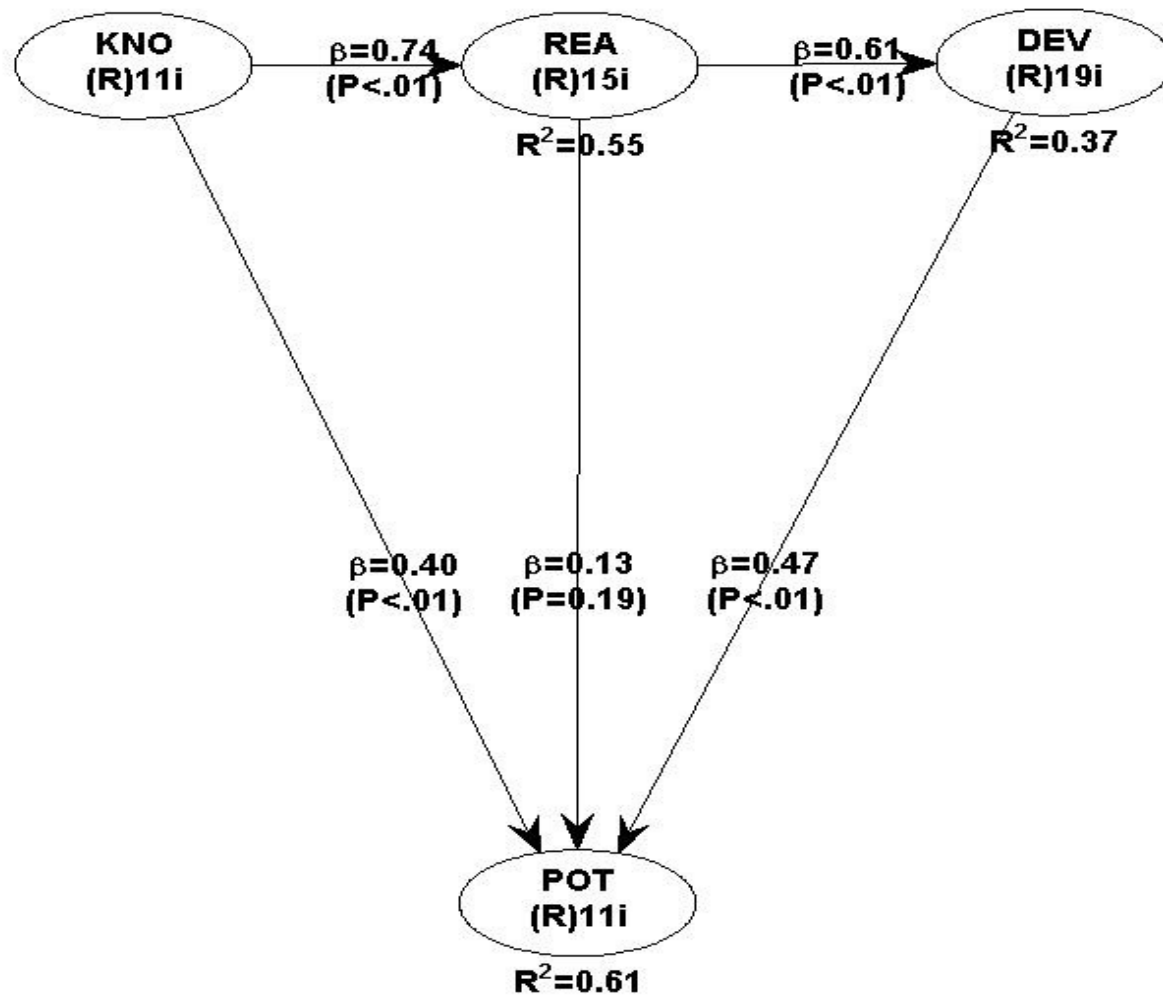
- To gauge the reliability of the questionnaire, we use the Cronbach's alpha and composite reliability methods as indicators to suggest as to whether the questionnaire's constructs are reliable to measure the connections among variables.

| <b>Indicator</b> | <b>Cronbach's Alpha</b> | <b>Rule of Thumb</b> | <b>Conclusion</b> |
|------------------|-------------------------|----------------------|-------------------|
| KNO              | 0.936                   | More than 0.6        | Acceptable        |
| REA              | 0.950                   | More than 0.6        | Acceptable        |
| DEV              | 0.940                   | More than 0.6        | Acceptable        |
| POT              | 0.965                   | More than 0.6        | Acceptable        |

| <b>Indicator</b> | <b>Composite Reliability</b> | <b>Rule of Thumb</b> | <b>Conclusion</b> |
|------------------|------------------------------|----------------------|-------------------|
| KNO              | 0.946                        | More than 0.7        | Acceptable        |
| REA              | 0.956                        | More than 0.7        | Acceptable        |
| DEV              | 0.947                        | More than 0.7        | Acceptable        |
| POT              | 0.970                        | More than 0.7        | Acceptable        |



# Main Analysis



## Findings:

- [POT] will improve by 0.40 points when [KNO] increases by one point, suggesting that when an insurance firm has knowledge toward sustainable insurance products, it shows a higher potential to develop sustainable insurance products in the future.
- [REA] will increase by 0.74 points when [KNO] increases by one point, thus explaining the fact that if an insurance company has knowledge of sustainable insurance products, it will be more ready to implement sustainable finance in its business activities.
- [REA] does not affect [POT] directly. If an insurance firm is ready to implement sustainable finance in its business activities, it does not necessarily mean that the insurance company shows a potential to develop sustainable insurance products in the future.
- [DEV] will increase by 0.61 points if [DEV] increases by one point, suggesting that when an insurance company is ready to implement sustainable finance in its business activities, it will be more likely to develop sustainable insurance products that correspond with the environmental-based activities and ESG issues in its business practice.
- [POT] will be higher by 0.47 points when [DEV] increases by one point, substantiating the conjecture that if an insurance firm has developed insurance products that are aware of the environmental-based activities and ESG issues in its business practice, the insurance company will show a higher potential to develop sustainable insurance products in the future.

# Conclusion

- Using partial least squares (PLS) SEM, our study confirms that:
  - The potential of product development in the future is dependent upon knowledge level and product development level of an insurer.
  - Readiness level of the insurer is indirectly related to the potential of product development through product development level of the insurer.
  - The knowledge level is predictive of the readiness level.
  - The readiness level is directly related to the product development level of the insurer.

Thank You